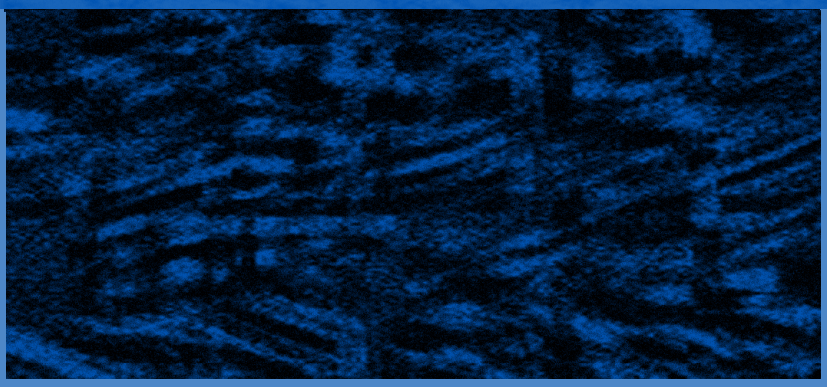
Section I

Science-Based Prevention



INCLUDED IN SECTION I

Science-Based Prevention

Dr. Snow's Story

During the cholera epidemic that threatened the lives of thousands of people in the 1850s, Dr. John Snow, an obstetrician in England, studied the causes and transmission of the disease. Before his research, people thought that cholera was transmitted by inhaling vapors from the coughing of infected patients. Through painstaking documentation of cholera cases, Dr. Snow showed that people who drew water from the lower Thames River in London, which was contaminated with sewage, accounted for far more cholera cases than people who drew their water from the upper Thames, which was clean.

Once Dr. Snow had persuaded local officials that his discoveries were accurate, using the evidence he had collected to make his case, the community removed the pump that was providing water from the lower Thames to the inhabitants who lived nearby. Thousands of lives were saved.

What does this story have to do with substance abuse prevention, far from the Thames and more than a 150 years later?

Today substance abuse—including alcohol, tobacco, other drugs, and household substances used as inhalants—are major public health problems, just as cholera was in the 1800s. Why? Because for too many young people, who are just approaching the most productive years of their lives, substance abuse impairs their health and their capacity to study, work, and build social relationships.

Added up across the lives of many individuals, this loss results in a tremendous cost to our nation. Substance abuse costs society billions of dollars in health care, insurance, and lost productivity. Equally painful are the costs measured in human terms: fatal car crashes, disrupted family life, lost opportunities at school and work, neglect, abuse, violence, and suicide. Yet many of these problems can be prevented. Just as Dr. Snow used evidence to map his course of action and prevent the spread of cholera, state and local planners can identify specific factors in their area that contribute to the problem and can then apply science-based solutions.

UNDERSTANDING THE CONCEPT OF SCIENCE-BASED PREVENTION

The field of substance abuse prevention has wrestled for years with these questions: What works, and how do we know it works? Federal and research agencies have played a major role in efforts to identify and disseminate knowledge about effective prevention practices to policymakers, practitioners, and the public.

This is often easier said than done: program directors and researchers bring different methodologies, standards, and expectations to their work. Some require experimental studies with control groups; others accept systematic observation; still others accept clinical judgments from practitioners. Some of the most commonly used approaches have never been evaluated, have been evaluated improperly, or show no evidence of effectiveness.

Program planners often lack easy access to knowledge about science-based prevention. As the call for increasing accountability at all levels grows louder, funders and community

constituents alike are raising their standards. They want to know what the chances are that a prevention program will be effective, and in what ways it can be expected to be effective. Working as planners and researchers, concerned professionals can contribute to the growing trend toward using science-based strategies. The result: local prevention programs that can truly make a difference.

A WORKING DEFINITION

In recent years, the field of prevention has made important progress in consolidating a body of knowledge that can support local practitioners. Science-based prevention is an approach to designing prevention strategies and programs that:

- is guided by several theories of change
- applies evidence from rigorous evaluation research on prevention strategies
- follows a process of strategic planning that focuses on assessment, design, implementation, and evaluation

SOME GUIDING THEORIES

Many theories guide prevention efforts in general: they present a hypothesis about change and the factors likely to support change. The challenge for local practitioners is having the time and money to stay current with the research on what works and to learn which strategies and programs can support their clients and communities. Practitioners who focus on family-based prevention often come to their work from backgrounds in social service, education, church or community activism, counseling, or adolescent development. Psychology and social change theories may or may not have been central in their training. Highlighted below are several other theories that inform this guide and that can inform local prevention efforts.

Public Health Theory

The role of public health is illustrated well in a story about one of its founding fathers, Dr. John Snow. Public health research uses data to study specific health problems: their frequency, their causes, and the kinds of people or groups affected. Armed with this kind of information, public health professionals design interventions targeted to specific groups of people. Over several decades this has brought about a new understanding of cause and effect as well as a crucial word change: the events that were once considered acts of chance and were routinely called

"accidents" are not, after all, chance events. They are predictable—*and* they are preventable. Prevention experts now speak of "injuries" or a "car crash" but avoid the word "accident."

This understanding has spread to community agencies beyond public health. Many agencies strive to base their prevention strategies on evidence of the causes and patterns of substance abuse behaviors, and on evidence of the strategies and programs that have been shown to make a difference.

The three-part public health model, shown in the CAPT framework on page v, looks at the *host*, or individual person experiencing the health problem; the *agent*, which causes harm; and the *environment*, the context in which the problem occurs and which influences the development of the problem.

In the case of cholera, the host was the individual who fell ill; the agent was the bacteria transmitted through vomit and stool; and the environment was the lower Thames, contaminated by sewage.

To take the case of alcohol abuse: the host is the individual who is drinking. The agent is the beverage—its alcoholic content and the amount consumed. (Four martinis act as a more powerful agent than one.) The environment includes the liquor store outlets in a neighborhood and advertising on television and in magazines that promotes beer drinking. On the positive side, the environment also includes laws that prohibit driving while intoxicated, antidrug media messages, and laws that prohibit the sale of alcohol to minors. It includes community action that enforces age-21 drinking laws in bars or on college campuses, or DWI laws. Michael Klitzner, for instance, points to estimates that only between 1 in 100 and 1 in 2,000 drunk-driving events result in arrest. Using a recent conservative estimate of 1 arrest in 200 events, there are 199 undetected drunk-driving events for each arrest.[14]

As community agencies apply the public health model to specific problems such as substance abuse, they need to understand this basic truth. Programs that use multiple strategies to achieve common goals and affect all three contributing factors—host, agent, and environment—are more likely to succeed than a program that focuses on only one kind of change.

Risk and Resiliency Theory

To design effective strategies for individuals, families, and communities, it is necessary to understand why some young people drink alcohol, smoke cigarettes, and use illicit and household substances (or fight or carry weapons) while others do not. Research finds that certain *risk factors* make it more likely that a particular young person will engage in substance abuse. Early and persistent antisocial behavior, a family history of substance abuse, and availability of alcohol, tobacco, and other drugs are examples of risk factors. Yet even children exposed to significant risk factors do not necessarily become involved with substances or encounter the problem behaviors associated with substance abuse once they reach adolescence. *Protective factors* in their lives—such as positive social orientation, an emotionally supportive family, and community norms unfavorable to substance use—can buffer them from risk.

The risk and resiliency concept has contributed significantly to efforts in substance abuse prevention. The hypothesis behind risk and resiliency theory,[15] tested and supported by research findings, holds that:

- the more risk factors a child has, the more likely it is that he or she will become involved with substances and their related problems in adolescence and young adulthood
- the more that these risk factors can be reduced, the less vulnerable to substance abuse the child will be
- the more that protective factors can be increased, the more likely it is that the child will be buffered from risk

In thinking about risk and resiliency, it is important to keep several points in mind. First, risk and protective factors are *associated* with substance abuse and other health problems; there is no one-to-one causal relationship between a particular factor and substance abuse. Second, reducing risk factors is not the same as increasing protective factors. Effective prevention programs seek to decrease risk factors and increase protective factors. Third, risk and protective factors can occur in all six aspects, or domains, of a child's life: individual, peer, family, school, community, and society (see the following exhibit).

EXHIBIT 1[16]

Protective and Risk Factors:

INDIVIDUAL/PEER FACTORS

Protective Factors

- Resilient temperament (e.g., the ability to adjust to or recover from misfortune or change)
- Positive social orientation (e.g., good nature, enjoy social interactions, and elicit positive attention from others)
- Positive relationships that promote close bonds (e.g., warm relationships with family members, relationships with teachers and other adults who encourage and recognize a young person's competence, and close friendships)
- Healthy beliefs and clear standards (e.g., absorbing the belief that it is best for children to be drug and crime free and to do well in school; subscribing to clear no-drug-or-alcohol family rules; internalizing the expectation that a young person do well in school; and following consistent family rules regarding problem behavior)

Risk Factors

- Early and persistent antisocial behavior
- Alienation, rebelliousness, and lack of bonding to society and school
- Academic failure
- Lack of commitment to school
- Favorable attitudes toward substance abuse and delinquency
- Early initiation of alcohol, tobacco, or other drug use or onset of violent behavior

FAMILY FACTORS

Protective Factors

- Positive bonding between family members
- Parenting that includes high levels of warmth and avoids severe criticism, a sense of basic trust, high parental expectations, and clear and consistent expectations, including children's participation in family decisions and responsibilities
- An emotionally supportive parental/family milieu, including parental attention to children's interests, orderly and structured parent-child relationships, and parent involvement in homework and school-related activities

Risk Factors

- Family history of alcohol abuse, smoking, or other illicit drug use or violence
- Family management problems (e.g., lack of clear expectations for behavior, failure of parents to monitor their children, and excessively severe or inconsistent punishment)
- Family conflict
- Favorable parental attitudes toward alcohol use, smoking, other illicit drug use or violence
- Current family alcohol abuse, smoking, or other illicit drug use or violent behavior

SCHOOL FACTORS

Protective Factors

- Caring and support; sense of "community" in classroom and school
- High expectations from school personnel
- Clear standards and rules for appropriate behavior
- Youth participation, involvement, and responsibility in school tasks and decisions

Risk Factors

- Harsh or arbitrary student management practices (e.g., lack of shared norms for behavior, inconsistent or poorly articulated expectations for learning and behavior)
- Availability of alcohol, tobacco, other drugs, and weapons on school premises
- Delinquent peer culture
- Ineffective administrative leadership
- Little emotional and social support
- Friends who engage in drinking alcohol, smoking cigarettes, using illicit drugs, or violent activity

COMMUNITY/SOCIETY FACTORS

Protective Factors

- High expectations of youth
- Opportunities for youth participation in community activities
- Media literacy (e.g., ability to recognize and resist media influences that glorify substance abuse)
- Community norms unfavorable to substance use (e.g., nonsmoking policies in restaurants, strict DWI laws, host liability laws, server training in bars and restaurants)
- Decreased accessibility of alcohol, tobacco, other drugs, and firearms (e.g., enforcement of purchasing ages for alcohol and tobacco, increased pricing of alcohol and tobacco through taxation)

Risk Factors

- Availability of alcohol, tobacco, and illicit drugs
- Availability of firearms
- Community laws and norms favorable toward alcohol, tobacco and other drug use, firearms, and crime
- Media portrayals of violence
- Transitions and mobility (i.e., the more often people in the community move, the greater the risk of both criminal behavior and drug-related problems in families)
- Low neighborhood attachment and community disorganization
- Extreme economic deprivation

Family Systems Theory

According to family systems theory, individual behavior is at least partly a result of interactions and experiences within the family group and a response to the complex set of "rules" that govern the family group.[17] Initially, it was observations about the ways in which schizophrenic patients and family members interact that led to this perspective. Other studies observed a similar pattern in the case of delinquents: in both cases parents and other family members treated the "problem" child differently from the way in which they treated the "normal" children.

Often it is the behavior of one family member (the mother who drinks too much, for instance, or the son who uses marijuana) that prompts a family to become involved with a therapist. When this happens, other family members typically claim that their family is just fine, that there would be no difficulties at all if only the mother or the son or some other family member would change. Therapists began to interpret the situation differently. Rather than seeing the individual as the sole source of the family's problems, they began to see these individuals as "symptom carriers," the ones who were expressing the trouble that was present in the family system overall. Therapists also observed that when the original patient improved, subtle forms of sabotage often occurred as family members tried to regain the former, familiar balance and dynamic in the family.

Intrigued with these ideas, therapists began to focus on the family group as a potential therapeutic unit. These observations, along with numerous studies, led to the concept that therapy needed to be oriented *toward the family as a whole*. The entire family system needed to change, not just the behavior of one-member. All the family members, their actions and reactions, came to be seen as potential forces for growth. Today family therapy focuses on identifying and restructuring patterns of behavior, especially communication patterns, changing individuals' perceptions of one another within the family, and improving the roles and functions of each member. Research documents that treatment tends to be more successful when the family is involved.[18]

Community Systems Theory

Community systems theory concentrates on the interactions among various sectors within a community—

businesses and social service agencies, for instance—that affect the health and welfare of the community as a whole. The major intent is to challenge practitioners, who may place responsibility for substance abuse problems entirely on the individual, to think about a broader set of causes.

Practitioners who work with families will continue to focus on the patterns and interactions of their clients. In addition, however, as they become more aware of this other "lens," practitioners are seeing more clearly that individual behavior takes place within a cultural, social, and environmental context. Increasingly, they acknowledge that major changes in substance abuse problems will not occur until the various sectors within a community work together. Mindful of the multiple layers of influence within a community, including the social networks in which young people, adults and professionals interact, they are collaborating with one another. Working together, they think carefully about the ability of each sector to react and adapt to conditions or changes in the economic, political, and social climate.

Once a group of colleagues come together to think about local prevention in this larger, systemic way, they are better positioned to design a community prevention effort that attempts to build on preexisting social structures instead of creating new systems to solve its substance abuse-related problems. With a focus on capacity building, practitioners are more likely to make positive changes that include the participation of many community stakeholders.[19] In their planning, they will take into account factors that affect substance use (by adults and youth), ranging from the available supply of substances, to social norms that influence the acceptability of substance use and individual and group attributes that affect consumption.[20] For example, a community that is interested in reducing the number of drunk-driving arrests and that adopts a multi-systems perspective might create a coalition of concerned citizens comprised of liquor store and bar merchants, police officers, school officials, policymakers, parents, and young people.

For examples of ways to apply knowledge from community systems theory, see the Conclusion, and Appendix B.

Environmental Change Theory

Environmental change theory holds that by altering the larger environment that many people share—in their communities and their society as a whole—it is possible to bring about broad change that over time can dramatically affect the health and well-being of many people. Practitioners and program planners, as well as the family members in their programs, can take action steps to influence factors in the wider environment: specifically, community norms; ordinances, laws, and regulations; and the availability of tobacco, alcohol, and other drugs. For instance, one of the most effective types of environmental strategies is to create and enforce state and local laws that limit the availability of the "agents" (alcohol, tobacco, and other drugs) to the "hosts" (young people). For example:

- The age-21 drinking law has saved an estimated 15,000 lives since the mid-1980s, when all 50 states were required to raise the minimum drinking age.[21]
- Thirty-six states by legislation and eight by case law have enacted dram shop laws, which hold servers responsible for serving to underage patrons.[22] Some studies have shown a relationship between lawsuits against servers and a decline in car crashes.[23] In states where lawsuits have created a high level of exposure to liability, alcohol establishments offer fewer low-priced drink promotions and more servers check identification.[24]
- Higher excise taxes on cigarettes appear to be among the most effective strategies for decreasing smoking by youth. One study estimated that doubling the federal excise tax on cigarettes in 1983 reduced the number of teenage smokers by 800,000.[25]

For examples of ways to apply knowledge from environmental change theory, see the Conclusion, and Appendix B.

Consider the student who, despite school-based efforts that include strict antismoking policies, a life skills curriculum,and alternative programs for youth, starts smoking. Her parents smoke. Her friends smoke. The local convenience store does not card her when she buys cigarettes. The magazines she reads are replete with advertisements and photographs showing how "cool"smoking can be.

PREVENTION TERMINOLOGY: GETTING ON THE SAME PAGE

What is the best way to talk about different types of prevention? As it has grown increasingly difficult to distinguish between prevention and treatment, an alternative classification

scheme has gained attention: one that *puts the population group targeted* front and center:[26]

General population. In the context of family-based prevention, *universal* measures are directed toward all families, including those who have not been identified on the basis of risk factors related to substance abuse but for whom exposure to prevention strategies may reduce the possibility of substance abuse.

Groups at risk. In the context of family-based prevention, *selective* measures are directed toward subgroups of the population: primarily toward families whose children face above-average risks of developing substance abuse problems (although they are not necessarily identified as having specific problems).

Individuals at risk. In the context of family-based prevention, *indicated* measures are directed toward families whose children have known, identified risks for developing substance abuse problems; usually families are referred because of identified problems (children's conduct problems, school failure, or delinquency or parental abuse or neglect).[27]

These categories are based on who receives the intervention, not the type of intervention provided.[28]

MOVING FORWARD

In the past, prevention programs tended to rely primarily on strategies that sought to change the individual's behavior, mainly through education and instruction. Alone, these strategies are usually inadequate or unable to bring about the level of change required. A prevention program that focuses only on individual change faces a major limitation: it places all the weight of choice and change on the individual. Yet the family context plays a crucial role in determining whether young people will abuse substances. Environmental factors also affect the choices that young people make.

Risk and protective factors exist at *every* level where an individual interacts with others. A child may face risk factors at one level (such as having a parent who abuses alcohol or other drugs) or at two or three levels: exhibiting a conduct disorder, for instance (individual risk), facing child abuse (family risk), or growing up in poverty (environmental risk). These factors may interact to create a situation of high risk for the child.

Translating the science of prevention into actual practice is a challenge, especially when the issues affecting risky behaviors seem complicated and multifaceted. Because substance abuse is a complex human behavior, preven-

tion—when it is effective—is more likely to be directed at individuals, families, *and* the larger environment.

Is it worth it? As we can see from the story of Dr. John Snow, it is. The cholera epidemic could have gone unchecked for many years. Thousands more people could have died. Time and money that was misspent could have been better spent, and sooner, in prevention efforts aimed at a mode of transmission which evidence demonstrated was the way that cholera spread. In substance abuse prevention, we have seen similar results from such interventions as age-21 drinking laws, combined with other, complementary strategies.